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Component Study Number 2

Projections of Labour Supply
by Occupation in Northwestern Ontario,
to 1981

by Frank A. Edwards

Ontario Ministry of Labour

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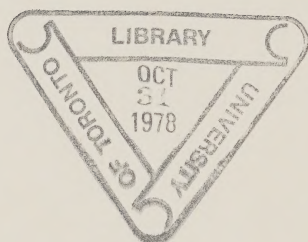


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PREFACE

The Northwestern Ontario Manpower Adjustment Study was undertaken by the Research Branch of the Ontario Ministry of Labour as one of the projects for the Canada/Ontario Interim Northlands Subsidiary Agreement under the General Development Agreement. The funds for this project were provided by Employment and Immigration Canada and by the Ontario Regional Priority Budget.

The objective of the Study is to provide information required for the development of policies and programmes designed to relieve structural imbalances in the labour market in Northwestern Ontario. The Study comprises ten component projects dealing with labour supply, labour demand, turnover and absenteeism, migration, and the labour market intentions of graduating students. A complete list of these projects appears inside the back cover.

The present report, "Projections of Labour Supply by Occupation in Northwestern Ontario, to 1981," investigates the various sources of additional labour supply in the Region during the next few years, and analyses the changing trends in their distribution by occupation and industry. The opinions expressed in this report are those of the author only, and do not reflect the official views of the Ontario Ministry of Labour, Employment and Immigration Canada, the Ontario Ministry of Treasury, Economics and Intergovernmental Affairs, or the Department of Regional Economic Expansion.

We would like to take this opportunity to thank the many individuals and organisations that helped us to complete this Study. Thanks are due to Employment and Immigration Canada and to the Ontario Regional Priority Budget, whose financial support made the Study possible. We also thank Dr. L. O. Stone, Professor Noah M. Meltz, and Professor C. A. Jecchinis; the members of the Committee On Getting and Holding Manpower in Northwestern Ontario; and Mr. Cliff McIntosh and Mr. Bob Michels of the Quetico Centre, all of whom helped during the planning stages of the Study. For supplying data indispensable to our research we thank the staff at Lakehead University and Confederation College; the Boards of Education in the Districts of Thunder Bay, Rainy River, and Kenora; and the employers and other persons too numerous to name whose contributions assisted us immeasurably. For cooperation and perseverance which facilitated our work we are indebted to many officials in both the Federal and Provincial Governments, and especially to the members of the Federal-Provincial Management Committee for the Interim Northlands Subsidiary Agreement. We are indebted as well to Mr. Michael Ryval and Mr. Charles Bogue, who edited the drafts of these reports for publication, and to the many persons on the clerical and secretarial staff of the Ontario Ministry of Labour whose assistance made it possible to complete these reports. For their encouragement and support we thank Mr. John Kinley and Mr. M. Skolnik, who were the Directors of the Research Branch at the Ontario Ministry of Labour while this Study was in progress, and Mr. G. S. Swartz, the current Director of the Branch. Finally, special thanks go to the author of the present report, Mr. Frank A. Edwards, for his work on the project.

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CHAPTER I

INTRODUCTION

The labour force of Northwestern Ontario¹ as a whole manifests a clear pattern of growth. It grew at an average annual rate of 1.4 percent between 1961 and 1971, and is expected to grow at an average annual rate of 2.3 percent between 1971 and 1981. However, between 1978 and 1981 the rate is projected to drop below 1.0 percent.² The Region will thus enter the 1980s with a labour force whose rate of growth has sharply declined.

Striking as this larger trend is, it means little unless it is possible to study the smaller trends that make it up. In order to give meaning to such a figure it is necessary to know several things: Where do those who join the labour force come from? What occupations and industries do they enter? How stable are these patterns of entry into the labour force?

The purpose of this report is to answer these questions. It considers three main sources of change in the labour force: the education sector, net migration, and "residual" change. The largest source is the Region's education system. Because the birth rate has declined from its unprecedented level after World War Two, this additional labour supply is expected to begin a decline, but only after the early 1980s.³ Migration has had a different effect on the growth of the Region's labour force. It has shifted from a net in-migration before the early 1960s to a small net out-migration between 1961 and 1971; this out-migration is projected to become larger until 1981.⁴ The remaining ("residual") change in the labour supply is attributable to births, deaths, and changing rates of participation in the labour force. Because the education sector exerts the greatest influence on the patterns of entry into the

¹"Northwestern Ontario" refers to the Northwestern Ontario Economic Region, defined by P. Camu, E. P. Weeks, and Z. W. Sametz in Economic Geography of Canada (Toronto: Macmillan, 1964), and recognised by the Ontario Ministry of Treasury, Economics, and Intergovernmental Affairs as one of its five Planning Regions for the Province of Ontario. Unless otherwise specified, the term "Region" as used in this report is synonymous with the above geographical designation.

²Frank A. Edwards, Projections of Total Labour Force in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 5 (hereafter referred to as the Total Labour Force Study).

³Saeed Quazi, Aribert Kleist, and John Holland, Projections of Enrolment and Graduates from Secondary and Post-Secondary Institutions in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 3 (hereafter referred to as the Graduate Projections Study).

⁴Leroy O. Stone and Tanya Wanio, Aspects of Migration in Northwestern Ontario, 1966-1971, Northwestern Ontario Manpower Adjustment Study, no. 8. The reader should note that the figures for migration and total labour supply that appear in the present report reflect the influence of demand, while the distributions of those leaving the education system do not. The reason for this difference and its significance are explained below (page 10).

Region's occupations⁵ and industries,⁶ the contribution from this sector receives the most extensive treatment in this report.

The data have been drawn mainly from other components of the Northwestern Ontario Manpower Adjustment Study. The projections of leavers (graduates and drop-outs) from the education sector are taken from the Graduate Projections Study. The distributions of these leavers by occupation and industry are made by using the intentions of graduating students as determined in component study no. 4⁷ and in an unpublished survey of secondary school students by the same author. The intentions data were used specifically to obtain distributions that did not include the effect of actual demand, and to identify those graduates and dropouts who did not intend to enter the labour force in Northwestern Ontario. Finally, the projections of migrants and total additions to the labour supply are taken from the Total Labour Force Study. The residual change in the labour supply is then calculated as the difference between the growth in the Region's labour force and the net contributions to this growth made by the education sector and migration.

The results of the analysis show that those leaving school are highly selective of the occupations and industries they intend to enter. Almost half expect to enter the following occupations: Clerical, Teaching, Fabricating and Assembling, Forestry and Logging, and Service Occupations; and almost half expect to enter the following industries: Community, Business and Personal Services, and Manufacturing.

It is interesting that an increasing proportion of leavers will enter those occupations requiring higher levels of education (except Medicine and Health), and a decreasing proportion will enter those requiring lower levels. This trend is a result of the fact that students should increasingly enter those programmes of study aimed at occupations requiring higher levels of education.

The estimated number of students entering the labour force is much greater than the projected growth of the Region's labour force between 1978 and 1981. This oversupply is only partially offset by a projected net out-migration from the Region's labour force and by an aggregate decline in participation rates. The apparent surplus probably results either from the use of different methodologies in the separate component studies on which this analysis is based (i.e., the use of data from reports that do or do not include the influence of demand on the labour supply), or from the assumptions that were made in order to integrate the results of these separate reports.

Because a number of assumptions had to be made in order to combine the information provided by these other component studies, the reader should use some caution when interpreting the results.

⁵Two-digit occupations as defined in the Canadian Classification and Dictionary of Occupations (1971).

⁶Two-digit industries as defined in the Standard Industrial Classification Manual (1970).

⁷Susan Allemang, Labour Market Intentions of Graduating Students from Post-Secondary Institutions in Northwestern Ontario, Northwestern Ontario Manpower Adjustment Study, no. 4 (hereafter referred to as the Labour Market Intentions Study).

CHAPTER II

METHODOLOGY

The figure on page 4 shows schematically how the three contributions to growth in the labour force are understood in this report. The labour force participants coming from the education sector, (1), are those who leave that sector excluding those who intend to migrate or enter the other-non-labour-force sector. The labour force participants resulting from net migration, (2), are calculated by applying projected rates of participation in the labour force to the numbers of net immigrants; this contribution is negative when there is a net out-migration. The residual increase in the labour force, (3), which can also be negative, comes from the other-non-labour-force sector.

Other demographic factors (enrolments, births, and deaths) are included to show the gains and losses in the education and other-non-labour-force sectors. The gains in these two sectors plus the growth in the labour force must equal the total increase in the population of Northwestern Ontario. In order to cross-check the calculations and provide a consistent framework for further analysis, these other demographic movements have also been calculated.¹

Since the data used in this report were obtained from several studies, certain assumptions had to be made in order to reconcile conflicts arising from the different methodologies used in the various studies.² The first three sections below show how the data on each source of labour supply were adapted for use in the present study. Each of these sections in turn is divided into three parts: the first explains the methodology used in obtaining aggregate projections for the years 1978 to 1981, the second shows how these aggregate projections were distributed by occupation and industry, and the third shows the total contribution of each source of supply to the labour force. The final section of this chapter points out certain factors that must be taken into account when interpreting the results.

1. Leavers from the education system

1. A. Graduates³

1. A. i. Aggregate projections of graduates

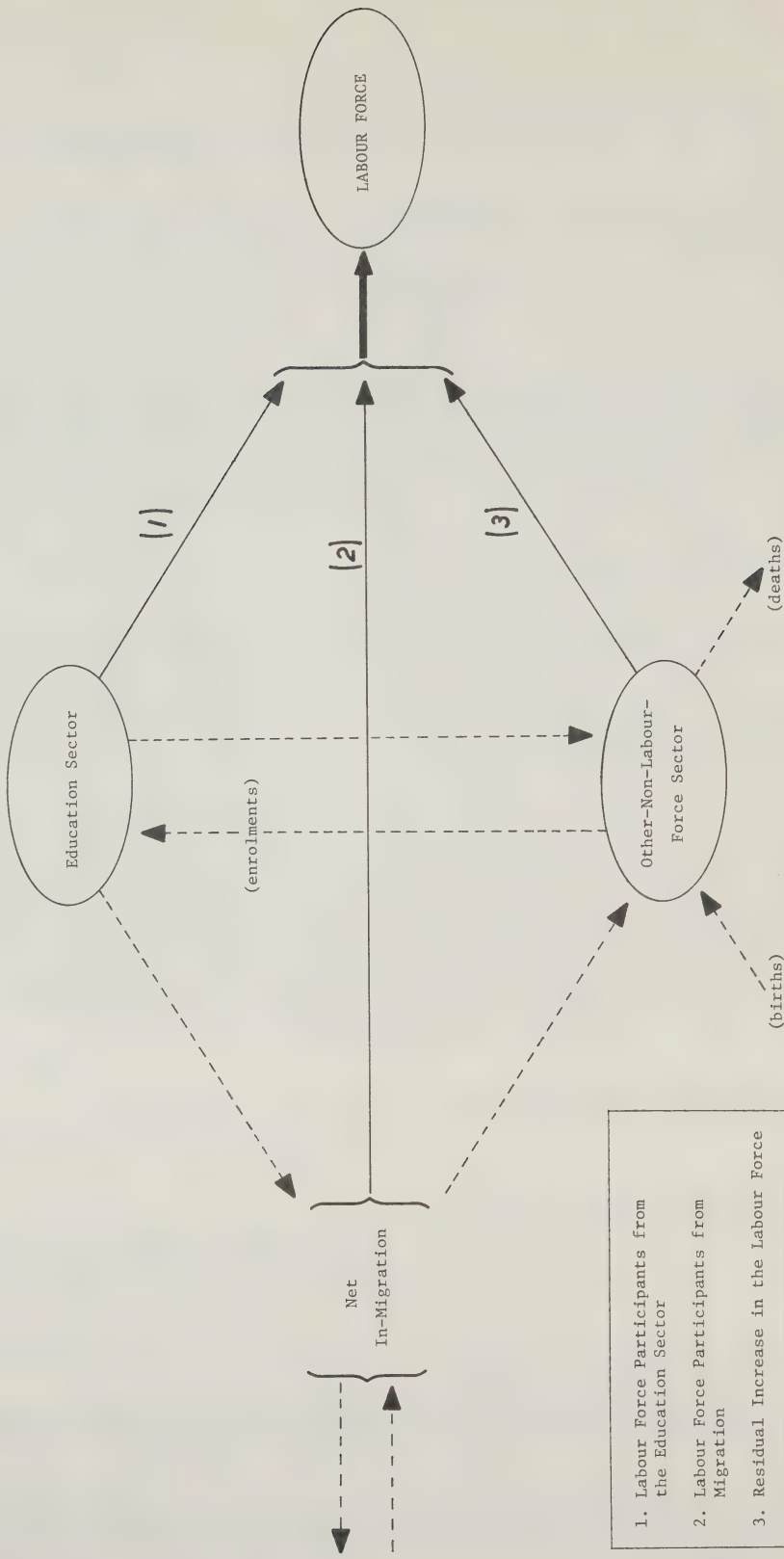
The Graduate Projections Study uses a "cohort" type of analysis that applies the "survival rates" of students passing from one grade to the next to a known or

¹These calculations are not essential to the results of the study, however. See Appendix I for complete information.

²These methodologies will not be discussed in detail. The reader who wants a fuller explanation of them should refer to the reports in question.

³"Graduates" in this discussion are only those from post-secondary institutions and from grade 13. In order to simplify the calculations, graduates from grade 12 are combined with all of those who drop out of school without completing grade 13 (see section 1. B., below).

Contributions to Growth in the Labour Force in Northwestern Ontario (Schematic Diagram)



projected "stock." The projections are for individual programmes as described in the academic calendars of each institution. However, the Labour Market Intentions Study aggregates individual programmes into major programme groups as defined in that study. This difference made it necessary to aggregate the projections of graduates to the major programme groups used in the Labour Market Intentions Study.

Difficulty was encountered in allocating the diploma and certificate graduates, projected as a whole in the Graduate Projections Study, to the separate major programme groups. This difficulty was overcome by distributing diploma and certificate graduates in the same way as in the 1977 Labour Market Intentions Study. The distribution was assumed to be constant for the 1978-81 period.

1. A. ii. The distributions of graduates by occupation and industry

Special tabulations were run on the intentions data in order to determine the number of students from each major programme group in the following categories (for the assumptions used in producing these tabulations, see Table 1, page 6):

- (i) those entering the labour force in Northwestern Ontario (by intended occupation and industry);
- (ii) those transferring to other educational institutions in Northwestern Ontario;
- (iii) those staying in Northwestern Ontario but not entering the labour force; and
- (iv) those intending to migrate from Northwestern Ontario.

The special tabulations were used to calculate "intentions factors"--the percentages of prospective graduates from each major programme who intended to enter each occupation and industry. The numbers of projected graduates from each major programme between 1978 and 1981 were then multiplied by these intentions factors in order to obtain distributions of the graduates by occupation and industry. Student intentions were assumed to remain constant between 1977 and 1981.

1. B. Dropouts

1. B. i. Aggregate projections of dropouts

In the Graduate Projections Study dropouts are calculated as the difference between the number of students finishing one grade and the number enrolled in the next higher grade. Thus, if there are 40 students in the second year of a given programme and only 30 enter third year one year later, the net result is ten dropouts. This is a net figure because in any grade there may be new enrolments from outside the Regional education system. For example, 12 of the 40 second-year students may actually drop out, only 28 going on to the third year, and two additional students may enrol in the third year, reducing the net number of dropouts to ten.

The fact that the number of dropouts is a net figure means that it was not necessary to make separate calculations of the numbers of workers returning to school for skill upgrading or retraining, or of those migrants or persons from the other-non-labour-force sector who enrol in the education system above grade 9. The result is a smaller figure for dropouts entering the labour force, and a larger figure for the residual additions to the labour force. Thus, the projected residual additions to the labour force shown in these calculations may actually include some migrants who enter the education system above grade 9, and the projected net dropouts may omit the same number of leavers who enter the labour force. The total number of additions

Table 1

Assumptions Used in the Special Tabulations

In order to adapt the data from the Labour Market Intentions Study to the four special tabulations without omitting any students or counting any twice, it was necessary to make the following assumptions:

1. Because respondents to the questionnaire could state more than one intention,* and because total potential labour supply figures were desired, respondents who said they were looking for a job were considered as part of the potential labour supply no matter what other intentions they gave.
2. Each student's intention to migrate was questioned several times in different contexts, and the results occasionally appeared to be contradictory. This difficulty was resolved by choosing the migratory intention specifically related to the student's job or educational plans. Thus, if he was entering the labour force, the location of his intended job was used;⁺ if he planned to return to school, the location of his educational institution was used;** if neither of these applied, his response to the general question on willingness to remain in the Region was used.⁺⁺ If a student gave no information or showed no preference he was assumed to be staying in Northwestern Ontario.
3. Students looking for jobs were tabulated according to their first choices of occupations and industries. However, in certain cases--e.g., where students already had full-time jobs or where they also intended to return to school--the intended occupations or industries were coded as no information, not seeking a job, or not applicable. In these cases the job codes from the students' present jobs or the "open-ended" question on the type of job desired in the future was used.
4. Students who indicated that they were looking for only a part-time job were assumed to contribute half their time to the labour force and half to school. These students were tabulated separately.

*Intentions Survey questions #15 and #17:

What are your plans from graduation in May 1977 to August 1977? (Check more than one where applicable)

- (a) Plan to attend a university or community college--Full time/Part time
- (b) Plan to attend another type of business or specialised college--Full time/Part time
- (c) Plan to look for a permanent job--Full time/Part time
- (d) Plan to look for a temporary job--Full time/Part time
- (e) Already have a job for next year--Full time/Part time
- (f) Plan to travel abroad
- (g) Plan to travel within Canada
- (h) Plan to get married
- (i) Undecided
- (j) Other (specify)

⁺Survey question #29:

Where do you expect to look for a job?

- (a) Within Northwestern Ontario
- (b) Within Northeastern Ontario
- (c) Within Southern Ontario
- (d) Outside Ontario (specify province)
- (e) Outside Canada (specify country)
- (f) Wherever I can find a job

**Survey question #19:

If you intend to attend a university or community college, will it be:

- (a) Within Northwestern Ontario (i.e. Districts of Thunder Bay, Kenora and Rainy River)
- (b) Outside Northwestern Ontario

⁺⁺Survey question #9:

If you answered "yes" to Question 8 [Do you have any plans to move from the community of your present residence (i.e. Thunder Bay) within the next year?], to where will you be moving?

- (a) Elsewhere in Northwestern Ontario
- (b) Northeastern Ontario
- (c) Metropolitan Toronto area
- (d) Elsewhere in Southern Ontario
- (e) Outside Ontario (specify province)
- (f) Outside Canada (specify country)

to the labour supply, of course, is the same.

1. B. ii. The distributions of dropouts by occupation and industry

In the present study the intentions factors calculated for graduates of a four-year secondary school programme were applied to: 1) the numbers of projected graduates from grade 12⁴ less the number who enrolled in grade 13;⁵ 2) dropouts from grades 9 to 12; and 3) students entering but not completing grade 13. Projected dropouts from Confederation College were assumed to enter the same occupations and industries at the same rates as graduates from the College, although possibly at lower job levels. All dropouts from Lakehead University were assumed to re-enter the education system.⁶ No data were available to indicate whether these University dropouts planned to migrate, what type of institutions they were transferring to, or what percentage of them, if any, actually intended to enter the work-force.

1. C. The contribution of the education sector to change in the labour supply

Table 2 shows the calculated contribution of the education sector to the labour supply in Northwestern Ontario. These figures include all graduates and dropouts from the secondary schools, from Lakehead University, and from Confederation College.

Table 2
Contribution to the Labour Supply from the Education System
in Northwestern Ontario

Year	Total Graduates and Dropouts		Out-Migrants and Those Not Seeking Employment		Net Contribution to the Labour Supply	
	Males	Females	Males	Females	Males	Females
1978	3359	3047	1948	1837	1411	1210
1979	3284	3050	1908	1848	1376	1202
1980	3307	3072	1916	1854	1391	1218
1981	3243	3051	1883	1839	1360	1212

⁴Those students graduating from grade 12 who are part of a five-year programme were excluded from the calculation of the intentions factors.

⁵The Graduate Projections Study treats all who complete grade 12 as graduates, whether or not they go on to grade 13. For the purposes of the present study these two groups had to be separated.

⁶A senior official at Lakehead University said that many students not completing their University programmes enrol in one of the Community College programmes.

2. Migration

2. A. Aggregate projections of migrants

Migrants were assumed to participate in the labour force at the same rate as the population of Northwestern Ontario as a whole. The net migration to the labour force was therefore estimated by applying the participation rates for male and female primary and secondary age groups⁷ to the net numbers of migrants. The remaining net migrants were out-migrants from the education system (calculated separately from the cross-tabulations and intentions factors) and those shown as entering the other-non-labour-force sector.

2. B. The distributions of the migrants by occupation and industry

Separate occupation and industry distributions of in- and out-migrants were obtained from the Statistics Canada special tabulations for the period from 1966 to 1971. Because more recent data were not available this distribution was assumed to remain the same for the period from 1978 to 1981.

The Statistics Canada tabulations give only the occupation distributions of in- and out-migrants in the experienced work-force. Projections of migrants entering and leaving the work-force between 1978 and 1981 were obtained from the Total Labour Force Study; the same participation rates were assumed for each. These were distributed by occupation according to the percentages obtained from the Statistics Canada tabulations, and added to obtain the net result. Unfortunately, distributions were available for only about half the migrants; the rest were included in an "other" category. There was also no distribution by sex.

2. C. The contributions of migration to the labour supply

Table 3 (page 9) shows the participation rates of males and females in the labour force and the calculated net number of migrants entering the labour supply.

3. The residual change in the supply of labour

3. A. Aggregate projections of the residual change

The remainder of the change in the labour force after accounting for the contributions from the education system and from migration is the aggregate residual change in the labour supply.

This residual change is the result of deaths and changing participation rates, and is shown as the contribution of the other-non-labour-force sector. Deaths are not distributed to the different sectors; they are considered to affect only the other-non-labour-force sector. Thus, the net contribution of this sector to the labour force, i.e., the residual change in the labour force, includes deaths in both the labour force and the education sector.

As noted above, in-migrants who actually enter the education system above grade 9 are counted as in-migrants to the other-non-labour-force sector, and are thus also included in the contribution of this group to the labour force.

⁷ The primary age group is 25 to 44 years of age; the secondary age groups are 15 to 24 and 45 to 64 years of age.

Table 3

The Contribution of Migration to the Labour Supply
in Northwestern Ontario

Year	Net Migration		Participation Rates		Contribution to the Labour Supply	
	Males	Females	Males	Females	Males	Females
Primary Age Group						
1978	-164	9	.9187	.4905	-151	4
1979	-184	2	.9128	.4924	-168	1
1980	-210	-6	.9067	.4930	-190	-3
1981	-375	-42	.9007	.4924	-338	-21
Secondary Age Groups						
1978	-45	-224	.8037	.5276	-36	-118
1979	-48	-225	.8017	.5289	-38	-119
1980	-50	-216	.7990	.5291	-40	-114
1981	-38	-71	.7957	.5284	-30	-37

Total Contribution of Migration to the Labour Supply
in Northwestern Ontario

Year	Males	Females
1978	-187	-114
1979	-206	-118
1980	-230	-111
1981	-368	-58

3. B. The distributions of the residual change in the labour supply by occupation and industry

The residual change in the labour supply cannot be distributed by occupation and industry with the available data. Although the portion of this residual change accounted for by deaths in the labour force could be distributed by occupation and industry, this analysis has not been included here.

3. C. The residual change in the labour supply

Table 4 shows the calculation of the residual change in the labour supply.

Table 4

The Residual Change in the Labour Supply in Northwestern Ontario

Year	Contribution of the Education Sector		Contribution of Migration		Total Change in the Labour Supply*		Residual Change in the Labour Supply	
	Males	Females	Males	Females	Males	Females	Males	Females
1978	1411	1210	-187	-114	574	642	-650	-454
1979	1376	1202	-206	-118	477	541	-693	-543
1980	1391	1218	-230	-111	385	455	-776	-652
1981	1360	1212	-368	-58	213	484	-779	-670

*See Appendix I, section 1, for further information.

4. Interpreting the results

It was noted earlier that the data in this report show an apparent oversupply of students entering the labour force (page 2). There are two possible explanations for this which must be borne in mind when studying the results of this report. One possibility is that it arises from a conflict in the methodologies used to obtain the data on which this report is based. The Total Labour Force Study is based on the interaction between the supply of labour and the demand for labour; since the figures for migrants and for aggregate additions to the labour force that appear in the present report are taken from that source, they include the influence of both factors. At the same time, the numbers of students moving from school to the labour force and their distributions by occupation and industry are calculated from "intentions factors," which exclude the influence of demand. The size of the contribution from the education sector and its distribution must therefore be understood hypothetically as the effect that is "desired" by those leaving this sector. In fact, some who intend to enter the labour force in Northwestern Ontario may not be able to find jobs there. Should this be the case, the figures shown for the additions to the labour supply from the education sector would be higher than the actual additions. An "inflated" figure for the contribution of this sector would in turn cause the residual change in the labour supply to appear as a higher negative number by the same amount. Were shortages of labour predicted for the period under consideration, the opposite would of course be true.

The more likely explanation, however, is that the projected contribution from the education sector may be affected by the assumption that dropouts (except those from Lakehead University) enter the labour force at the same rate as graduates. Should dropouts prove to have a lower (or higher) rate of entry into the labour force than graduates, the calculated contribution of the education sector to the supply of labour would be too large (or too small).

It should be clear from what has been said above that this report gives results which in all probability show the maximum potential additions to the labour supply from the education sector. The actual figures are likely to be lower.

CHAPTER III

RESULTS

The additions to the labour supply from the education sector are more than double the forecast increase in the labour force in Northwestern Ontario (see Table 4, page 10). Although a net out-migration of workers from Northwestern Ontario is projected for the 1978-1981 period, the losses are small and leave a large negative residual change in the labour supply. This large negative residual change may reflect the fact that the projections of total changes in the labour force and of the contributions made by net migration include the effects of demand on supply, whereas the distributions of leavers from the education sector entering the labour force do not. In fact, if the effects of deaths, migration, and changing participation rates are excluded from the residual change, it becomes clear that roughly 30 percent of the males and 40 percent of the females who intend to enter the labour force from the education sector in Northwestern Ontario will not be able to do so.¹

The distributions of school-leavers by occupation and industry are clear-cut. Almost half the persons leaving the education sector between 1978 and 1981 are expected to enter the following occupation groups: Clerical (14.3 percent), Teaching (9.8 percent), Fabricating and Assembling (9.5 percent), Forestry and Logging (7.8 percent), and Service Occupations (7.1 percent) (see Table 5, page 13).²

The intended industries which those leaving school may be expected to enter are in accordance with their intended occupations. Over 50 percent of the females intend to enter firms in Community, Business and Personal Services, and almost 50 percent of the males intend to enter firms in Manufacturing, in Community, Business and Personal Services, and in Forestry (see Table 6, page 14).³

Over 30 percent of the females are projected to seek jobs in Clerical occupations, and over 30 percent of the males are projected to seek jobs in Fabricating and Assembling and in Forestry and Logging. These percentages are expected to decline between 1978 and 1981.

It is evident from Table 5 that an increasing proportion of leavers will enter those occupations requiring higher levels of education (except Medicine and Health), and a decreasing proportion will enter those requiring lower levels. Among industries this pattern holds good for Transportation, Communication and Other Utilities, but not for Community, Business and Personal Services (see Table 6).

¹The reader should consult Chapter II, section 4, for the information necessary to interpret these results. It should be noted that the large discrepancy between the number of leavers from the education sector and the amount of growth of the labour force may represent one of the major imbalances in the labour market in Northwestern Ontario during the next few years. The consequences of this imbalance, which may include significant unemployment or out-migration, warrant further investigation.

²For the detailed numerical distribution, see Appendix II.

³For the detailed numerical distribution, see Appendix III.

Additions to the Labour Supply from the Formal Education Sector, by Occupation

Occupation Group	Change in Distribution 1978-1981 (%)		Approximate Distribution:	
	Distribution 1978 (%)	Distribution 1981 (%)	Post-Secondary (%)	Secondary (%)
Males				
Fabricating and Assembling (85)	17.7	17.2	1	99
Forestry and Logging (75)	14.0	13.2	25	75
Teaching and Related (27)	8.6	9.3	98	2
Natural Science, Engineering and Mathematics (21)	8.4	8.6	70	30
Service Occupations (61)	6.9	6.7	10	90
Construction (87)	5.3	6.0	75	25
Artistic, Literary, Performing Arts and Related (33)	4.8	4.8	20	80
Other	34.3	34.2	--	--
Total	100.0	100.0	30	70
Females				
Clerical (41)	31.0	30.7	15	85
Social Science and Related (23)	12.6	12.8	60	40
Teaching and Related (27)	11.1	11.5	90	10
Medicine and Health (31)	10.6	9.4	85	15
Service Occupations (61)	7.3	7.3	20	80
Artistic, Literary, Performing Arts and Related (33)	5.3	5.2	30	70
Management and Administration (11)	4.8	4.8	25	75
Other	17.3	18.3	--	--
Total	100.0	100.0	40	60

Table 6

Additions to the Labour Supply from the Formal Education Sector, by Industry

Occupation Group	Distribution		Change in Distribution 1978-1981 (%)	Approximate Distribution:	
	1978 (%)	1981 (%)		Post- Secondary (%)	Secondary (%)
Males					
Manufacturing (5)	24.1	24.1	--	15	85
Community, Business and Personal Services (10)	16.5	16.4	-0.6	75	25
Forestry (2)	13.2	12.4	-6.1	30	70
Transportation, Communication and Other Utilities (7)	8.9	9.5	+6.7	60	40
Mines, Quarries and Oil Wells (4)	6.8	6.6	-2.9	1	99
Construction (6)	6.7	6.8	+1.5	10	90
Other	23.8	24.2	+1.7	--	--
Total	100.0	100.0	--	30	70
Females					
Community, Business and Personal Services (10)	54.2	53.5	-1.3	60	40
Trade (8)	8.7	8.7	--	5	95
Finance, Insurance and Real Estate (9)	5.9	5.8	-1.7	10	90
Manufacturing (5)	4.8	4.8	--	10	90
Public Administration and Defence (11)	4.8	4.8	--	20	80
Other	21.6	22.4	+3.7	--	--
Total	100.0	100.0	--	40	60

Table 7
The Effect of Net Migration on the Labour Supply

	1978			1981		
	Contribution of Net Migration	Contribution of Education	Net Contribution	Contribution of Net Migration	Contribution of Education	Net Contribution
Teaching and Related (#27)	217	257	474	167	267	434
Fabricating and Assembling (#85)	-57	250	193	-92	234	142
Forestry and Logging (#75)	199	204	403	184	192	376
Service Occupations (#61)	-60	185	125	-142	179	37
Management and Administration (#11)	-132	84	-48	-168	83	-85
Construction (#87)	-4	75	71	-51	81	30

The reader should note that the change in the percentages of leavers entering the different occupation and industry groups between 1978 and 1981 results from changing patterns of enrolment in the different educational courses. Intentions are assumed to remain constant for each programme of study during this period.

The effect of net migration on the major occupation groups is summarised in Table 7 (page 15).⁴ Net migration increases the supply of labour in Teaching and Related Occupations and in Forestry and Logging, occupation groups that already receive a large supply of additional labour from the education sector. The effect of migration on the other major occupation groups is to offset the additional supply from the education sector; in fact, it more than offsets this supply in Management and Administrative Occupations. By 1981 the additional labour supplies from net migration will be reduced and the losses from the labour force resulting from migration will significantly increase.

⁴For the detailed numerical distribution, see Appendix IV.

APPENDIX I

THE CHECK FOR CONSISTENCY IN THE ANALYTICAL FRAMEWORK

In this report the population of Northwestern Ontario is divided into three sectors: i) the labour force sector; ii) the education sector; and iii) the other-non-labour-force sector. If these sectors are labelled F, E, and O, respectively, if the gains and losses from each sector are labelled G and L, respectively, and if the total population of Northwestern Ontario is labelled P, then it can be seen that

$$(G - L)_F + (G - L)_E + (G - L)_O = (G - L)_{NWO} = \Delta P_{NWO}$$

In other words, the sum of the gains minus the losses in the three sectors is equal to the gain minus the loss for the total population of Northwestern Ontario, $(G - L)_{NWO}$, which is equal to the change in the population for the Region as a whole, ΔP_{NWO} . The rest of this appendix describes how each of these calculations is made.

1. The change in the labour force

The yearly changes in the labour force between 1976 and 1981 are obtained from the projections in the Total Labour Force Study (see Table 8).

Table 8
The Change in the Labour Force

Year	Labour Force		Yearly Change in the Labour Force	
	Male	Female	Male	Female
1978	66,869	38,137	--	--
1979	67,443	38,779	574	642
1980	67,921	39,320	477*	541
1981	68,306	39,775	385	455
1982	68,518	40,258	213	484

*A difference of one is due to the rounding of the labour force figures to the nearest whole number.

2. The change in the education sector

The change in the population of the education sector is the number of enrolments in grade 9 minus the number of graduates and dropouts who do not return to the

education system. Since the number of dropouts is a net figure that includes enrolments above grade 9, the effect of these enrolments is included in the calculated population change. It should also be noted that all dropouts from the University are assumed to re-enter the education system within Northwestern Ontario. The calculated population changes may thus be high by the number of students dropping out of the University who actually leave the Region or enter the labour force (see Table 9).

Table 9
Calculation of the Change in the Population
of the Education Sector

Year	Enrolments in Grade 9		Leavers Excluding Transfers		Yearly Change in the Education Sector	
	Male	Female	Male	Female	Male	Female
1978	2384	2290	2732	2334	-348	-44
1979	2236	2148	2671	2333	-435	-185
1980	2210	2124	2693	2353	-483	-229
1981	1909	1834	2673	2465	-728	-631

3. The change in the other-non-labour-force sector

Losses from the other-non-labour-force sector occur through deaths, enrolments in the education sector, and residual additions to the labour supply. Gains arise from births and from net in-migration, which may be negative. The number of net in-migrants to this sector is calculated from the total net in-migrants to the Region. Subtracted from this is the number of net in-migrants who enter the labour force. Because those leavers from the education sector who migrate out of the Region account for some of the out-migrants included in the calculation of total net in-migrants, these leavers are added to obtain the residual net in-migration entering the other-non-labour-force sector (see Table 10, below, and Table 11, page 19).

Table 10
Calculation of the Residual Net Migration

Year	Net In-Migration		Contribution of In-Migration to the Labour Force		Out-Migrants + from Education		Residual Net In-Migration	
	Male	Female	Male	Female	Male	Female	Male	Female
1978	-378	-347	-187	-114	1291	1090	1100	857
1979	-412	-371	-206	-118	1267	1097	1061	844
1980	-466	-398	-230	-111	1273	1101	1037	814
1981	-867	-534	-368	-58	1248	1227	749	751

Table 11
Calculation of the Change in the Other-Non-Labour-Force Sector

Year	Residual Net Migration		+	Net Births		+	Net Entrants from the Education Sector		+	Contribution from the Labour Supply		=		Yearly Changes in the Other-Non-Labour-Force Sector	
	Male	Female		Male	Female		Male	Female		Male	Female	Male	Female	Male	Female
1978	1100	857		1316	1678		-2354	-2256		650	454	712	733		
1979	1061	844		1311	1675		-2208	-2114		693	543	857	948		
1980	1037	814		1301	1668		-2181	-2090		776	652	933	1044		
1981	749	751		1248	1622		-1880	-1808		779	670	896	1235		

4. Final check on the consistency of the framework

The projected total population of Northwestern Ontario was obtained from the Total Labour Force Study (see Table 12).

Table 12
The Change in the Population

Year	Total Population of Northwestern Ontario		Change in the Yearly Population	
	Male	Female	Male	Female
1978	122,809	119,045	--	--
1979	123,747	120,376	938	1331
1980	124,647	121,680	899*	1304
1981	125,482	122,951	835	1270*
1982	125,863	124,951	381	1088

*A difference of one is caused by rounding the population figures to the nearest whole number.

The consistency of the analytical framework is demonstrated in Table 13, page 21. Note that the calculated change in the population is identical with the projected population change shown in the table above.

Table 13

Calculation of the Change in the Population from the Three Sectors

Year	Change in the Labour Force Sector		+	Change in the Education Sector		+	Change in the Other-Non-Labour-Force Sector		=	Calculated Yearly Change in the Population	
	Male	Female		Male	Female		Male	Female		Male	Female
1978	574	642		-348	-44		712	733		938	1331
1979	477	541		-435	-185		857	948		899	1304
1980	385	455		-483	-229		933	1044		835	1270
1981	213	484		-728	-631		896	1235		381	1088

Table 14

Aggregate Numbers of Secondary and Post-Secondary Graduates and Dropouts Entering the Labour Supply
in Northwestern Ontario, 1978 to 1981, by Occupation^a

Occupation Group	1978		1979		1980		1981	
	Males	Females	Males	Females	Males	Females	Males	Females
Not Seeking a Job	1646	1616	1626	1631	1619	1633	1596	1618
Migrants	302	221	282	217	297	221	287	221
Managerial, Administrative and Related Occupations (11)	26	58	22	57	25	57	25	58
Occupations in Natural Sciences, Engineering and Mathematics (21)	118	18	112	18	117	18	117	21
Occupations in Social Sciences and Related Fields (23)	21	152	21	154	22	157	21	155
Teaching and Related Occupations (27)	122	135	121	136	126	141	127	140
Occupations in Medicine and Health (31)	19	128	15	110	18	113	17	114
Artistic, Literary, Performing Arts and Related Occupations (33)	68	64	67	63	67	65	65	63
Clerical and Related Occupations (41)	7	375	7	378	7	378	7	372
Sales Occupations (51)	34	49	34	49	35	48	34	50
Service Occupations (61)	97	88	95	88	94	90	91	88
Farming, Horticultural and Animal-Husbandry Occupations (71)	7	25	7	25	7	25	7	24
Fishing, Hunting, Trapping and Related Occupations (73)	46	--	44	--	43	--	42	--
Forestry and Logging Occupations (75)	197	7	183	8	182	11	179	13
Mining and Quarrying Including Oil and Gas Field Occupations (77)	45	--	45	--	44	--	43	--
Processing Occupations (81-82)	19	--	19	--	20	--	19	--
Machining and Related Occupations (83)	48	--	51	--	52	--	51	--
Product Fabricating, Assembling and Repairing Occupations (85)	250	--	246	--	241	--	234	--
Construction Trades Occupations (87)	75	2	78	2	85	2	81	2
Transport Equipment Operating Occupations (91)	46	--	45	--	44	--	43	--
Other Crafts and Equipment Operating Occupations (95)	2	--	2	--	3	--	2	--
Occupations Not Elsewhere Classified (99)	24	6	24	6	24	6	23	6
No Information/ Not Applicable	140	103	138	108	135	107	132	106
Total	3359	3047	3284	3050	3307	3072	3243	3051

^aCompiled from the data given in Saeed Quazi, Aribert Kleist, and John Holland, Projections of Enrolment and Graduates From Secondary and Post-Secondary Institutions in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 3; and Susan Allemang, Labour Market Intentions of Graduating Students from Post-Secondary Institutions in Northwestern Ontario, Northwestern Ontario Manpower Adjustment Study, no. 4.

Table 15

Numbers of Post-Secondary Graduates and Dropouts Entering the Labour Supply
in Northwestern Ontario, 1978 to 1981, by Occupation*

Occupation Group	1978		1979		1980		1981	
	Males	Females	Males	Females	Males	Females	Males	Females
Not Seeking a Job	251	104	229	104	249	108	250	111
Migrants	167	113	150	109	167	112	161	114
Managerial, Administrative and Related Occupations (11)	19	14	15	13	18	13	18	14
Occupations in Natural Sciences, Engineering and Mathematics (21)	83	4	77	4	83	4	84	7
Occupations in Social Sciences and Related Fields (23)	14	92	14	93	15	96	14	95
Teaching and Related Occupations (27)	119	124	118	125	123	130	124	129
Occupations in Medicine and Health (31)	9	108	5	90	8	93	7	94
Artistic, Literary, Performing Arts and Related Occupations (33)	12	18	12	17	13	19	12	18
Clerical and Related Occupations (41)	--	52	--	54	--	53	--	53
Sales Occupations (51)	14	23	14	23	15	22	15	24
Service Occupations (61)	8	16	8	16	9	17	8	17
Farming, Horticultural and Animal-Husbandry Occupations (71)	--	1	--	1	--	1	--	1
Fishing, Hunting, Trapping and Related Occupations (73)	3	--	2	--	2	--	2	--
Forestry and Logging Occupations (75)	53	5	41	6	43	9	43	10
Mining and Quarrying Including Oil and Gas Field Occupations (77)	--	--	--	--	--	--	--	--
Processing Occupations (81-82)	2	--	2	--	3	--	3	--
Machining and Related Occupations (83)	13	--	16	--	18	--	18	--
Product Fabricating, Assembling and Repairing Occupations (85)	2	--	2	--	2	--	2	--
Construction Trades Occupations (87)	57	2	59	2	66	2	62	2
Transport Equipment Operating Occupations (91)	--	--	--	--	--	--	--	--
Other Crafts and Equipment Operating Occupations (95)	2	--	2	--	3	--	2	--
Occupations Not Elsewhere Classified (99)	7	--	7	--	7	--	7	--
No Information/Not Applicable	3	4	2	8	2	7	2	8
Total	838	680	775	665	846	686	834	697

*Compiled from the data given in Saeed Quazi, Aribert Kleist, and John Holland, Projections of Enrolment and Graduates from Secondary and Post-Secondary Institutions in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 3; and Susan Allemang, Labour Market Intentions of Graduating Students from Post-Secondary Institutions in Northwestern Ontario, Northwestern Ontario Manpower Adjustment Study, no. 4.

Table 16

Numbers of Secondary School Graduates and Dropouts Entering the Labour Supply
in Northwestern Ontario, 1978 to 1981, by Occupation*

Occupation Group	1978		1979		1980		1981	
	Males	Females	Males	Females	Males	Females	Males	Females
Not Seeking a Job	1395	1512	1397	1527	1370	1525	1346	1507
Migrants	135	108	132	108	130	109	126	107
Managerial, Administrative and Related Occupations (11)	7	44	7	44	7	44	7	44
Occupations in Natural Sciences, Engineering and Mathematics (21)	35	14	35	14	34	14	33	14
Occupations in Social Sciences and Related Fields (23)	7	60	7	61	7	61	7	60
Teaching and Related Occupations (27)	3	11	3	11	3	11	3	11
Occupations in Medicine and Health (31)	10	20	10	20	10	20	10	20
Artistic, Literary, Performing Arts and Related Occupations (33)	56	46	55	46	54	46	53	45
Clerical and Related Occupations (41)	7	323	7	324	7	325	7	319
Sales Occupations (51)	20	26	20	26	20	26	19	26
Service Occupations (61)	89	72	87	72	85	73	83	71
Farming, Horticultural and Animal-Husbandry Occupations (71)	7	24	7	24	7	24	7	23
Fishing, Hunting, Trapping and Related Occupations (73)	43	--	42	--	41	--	40	--
Forestry and Logging Occupations (75)	144	2	142	2	139	2	136	3
Mining and Quarrying Including Oil and Gas Field Occupations (77)	45	--	45	--	44	--	43	--
Processing Occupations (81-82)	17	--	17	--	17	--	16	--
Machining and Related Occupations (83)	35	--	35	--	34	--	33	--
Product Fabricating, Assembling and Repairing Occupations (85)	248	--	244	--	239	--	232	--
Construction Trades Occupations (87)	18	--	19	--	19	--	19	--
Transport Equipment Operating Occupations (91)	46	--	45	--	44	--	43	--
Other Crafts and Equipment Operating Occupations (95)	--	--	--	--	--	--	--	--
Occupations Not Elsewhere Classified (99)	17	6	17	6	17	6	16	6
No Information/Not Applicable	137	99	136	100	133	100	130	98
Total	2521	2367	2509	2385	2461	2386	2409	2354

*Compiled from the data given in Saeed Quazi, Aribert Kleist, and John Holland, *Projections of Enrolment and Graduates from Secondary and Post-Secondary Institutions in Northwestern Ontario, to 1981*, Northwestern Ontario Manpower Adjustment Study, no. 3; and Susan Allemang, *Labour Market Intentions of Graduating Students from Post-Secondary Institutions in Northwestern Ontario, Northwestern Ontario Manpower Adjustment Study*, no. 4.

APPENDIX III

Table 17

Aggregate Numbers of Secondary and Post-Secondary Graduates and Dropouts Entering the Labour Supply
in Northwestern Ontario, 1978 to 1981, by Industry*

Industry Division	1978		1979		1980		1981	
	Males	Females	Males	Females	Males	Females	Males	Females
Not Seeking a Job	1646	1616	1626	1631	1619	1633	1596	1618
Migrants	302	221	282	217	297	221	287	221
Agriculture (1)	47	7	44	7	47	7	47	7
Forestry (2)	186	25	171	26	172	29	169	30
Fishing and Trapping (3)	29	9	29	9	28	9	28	9
Mines, Quarries and Oil Wells (4)	96	5	95	5	93	5	90	5
Manufacturing Industries (5)	340	58	337	59	336	60	327	58
Construction (6)	95	6	95	6	95	6	93	6
Transportation, Communication and Other Utilities (7)	126	50	126	51	133	51	129	52
Trade (8)	57	106	56	107	56	107	53	105
Finance, Insurance, and Real Estate (9)	13	71	12	72	13	72	12	71
Community, Business and Personal Service Industries (10)	234	656	226	639	236	651	223	649
Public Administration and Defence (11)	67	58	65	57	65	58	73	58
No Information/Not Applicable	121	159	120	164	117	163	116	162
Total	3359	3047	3284	3050	3307	3072	3243	3051

*Compiled from the data given in Saeed Quazi, Aribert Kleist, and John Holland, Projections of Enrolment and Graduates from Secondary and Post-Secondary Institutions in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 3; and Susan Allemang, Labour Market Intentions of Graduating Students from Post-Secondary Institutions in Northwestern Ontario, Northwestern Ontario Manpower Adjustment Study, no. 4.

Table 18

Numbers of Post-Secondary Graduates and Dropouts Entering the Labour Supply
in Northwestern Ontario, 1978 to 1981, by Industry*

Industry Division	1978		1979		1980		1981	
	Males	Females	Males	Females	Males	Females	Males	Females
Not Seeking a Job	251	104	229	104	249	108	250	111
Migrants	167	113	150	109	167	112	161	114
Agriculture (1)	33	1	30	1	33	1	34	1
Forestry (2)	57	5	44	6	47	9	47	10
Fishing and Trapping (3)	1	--	1	--	1	--	1	--
Mines, Quarries and Oil Wells (4)	1	--	1	--	1	--	1	--
Manufacturing Industries (5)	46	5	46	6	51	6	49	6
Construction (6)	8	--	9	--	10	--	10	--
Transportation, Communication and Other Utilities (7)	70	9	71	10	79	10	76	12
Trade (8)	7	1	7	1	8	1	7	1
Finance, Insurance, and Real Estate (9)	3	7	2	7	3	7	2	7
Community, Business and Personal Service Industries (10)	168	396	161	379	172	390	170	392
Public Administration and Defence (11)	14	13	13	12	14	13	14	13
No Information/Not Applicable	12	26	11	30	11	29	12	30
Total	838	680	775	665	846	686	834	697

*Compiled from the data given in Saeed Quazi, Aribert Kleist, and John Holland, Projections of Enrolment and Graduates from Secondary and Post-Secondary Institutions in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 3; and Susan Allemang, Labour Market Intentions of Graduating Students from Post-Secondary Institutions in Northwestern Ontario, Northwestern Ontario Manpower Adjustment Study, no. 4.

Table 19
Numbers of Secondary School Graduates and Dropouts Entering the Labour Supply
in Northwestern Ontario, 1978 to 1981, by Industry*

Industry Division	1978		1979		1980		1981	
	Males	Females	Males	Females	Males	Females	Males	Females
Not Seeking a Job	1395	1512	1397	1527	1370	1525	1346	1507
Migrants	135	108	132	108	130	109	126	107
Agriculture (1)	14	6	14	6	14	6	13	6
Forestry (2)	129	20	127	20	125	20	122	20
Fishing and Trapping (3)	28	9	28	9	27	9	27	9
Mines, Quarries and Oil Wells (4)	95	5	94	5	92	5	89	5
Manufacturing Industries (5)	294	53	291	53	285	54	278	52
Construction (6)	87	6	86	6	85	6	83	6
Transportation, Communication and Other Utilities (7)	56	41	55	41	54	41	53	40
Trade (8)	50	105	49	106	48	106	46	104
Finance, Insurance, and Real Estate (9)	10	64	10	65	10	65	10	64
Community, Business and Personal Service Industries (10)	66	260	65	260	64	261	53	257
Public Administration and Defence (11)	53	45	52	45	51	45	59	45
No Information/Not Applicable	109	133	109	134	106	134	104	132
Total	2521	2367	2509	2385	2461	2386	2409	2354

*Compiled from the data given in Saeed Quazi, Aribert Kleist, and John Holland, Projections of Enrolment and Graduates from Secondary and Post-Secondary Institutions in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 3; and Susan Allenang, Labour Market Intentions of Graduating Students from Post-Secondary Institutions in Northwestern Ontario, Northwestern Ontario Manpower Adjustment Study, no. 4.

APPENDIX IV

Table 20

Net Migration to the Labour Supply in Northwestern Ontario, 1978 to 1981*

Occupation Group	1978**	1979**	1980**	1981**
Managerial, Administrative and Related Occupations (11)	-132	-135	-140	-168
Teaching and Related Occupations (27)	217	213	207	167
Service Occupations (61)	-60	-67	-76	-142
Forestry and Logging Occupations (75)	199	198	196	184
Mining and Quarrying Including Oil and Gas Field Occupations (77)	24	23	20	4
Processing Occupations (81-82)	-4	-5	-8	-24
Machining and Related Occupations (83)	-51	-53	-54	-66
Product Fabricating, Assembling and Repairing Occupations (85)	-57	-60	-64	-92
Construction Trades Occupations (87)	-4	-8	-13	-51
Transport Equipment Operating Occupations (91)	-129	-133	-138	-171
Other	-728	-756	-794	-1042
Total	-725	-783	-864	-1401

*Compiled from the data given in Frank Edwards, Projections of Total Labour Force in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 5.

**Differences of one in the net figures are due to the rounding of the in- and out-migration sub-totals.

Table 21

In-Migration to the Labour Supply in Northwestern Ontario, 1978 to 1981*

Occupation Group	1966-71 Distribution Factor [§]	1978	1979	1980	1981
Managerial, Administrative and Related Occupations (11)	4.7	426	426	426	416
Teaching and Related Occupations (27)	9.3	844	844	842	822
Service Occupations (61)	12.3	1116	1116	1114	1087
Forestry and Logging Occupations (75)	3.7	336	336	335	327
Mining and Quarrying Including Oil and Gas Field Occupations (77)	3.4	309	308	308	301
Processing Occupations (81-82)	3.2	290	290	290	283
Machining and Related Occupations (83)	1.7	154	154	154	150
Product Fabricating, Assembling and Repairing Occupations (85)	5.1	463	463	462	451
Construction Trades Occupations (87)	7.3	662	662	661	645
Transport Equipment Operating Occupations (91)	5.6	508	508	507	495
Other	43.7	3966	3964	3957	3863
Total [†]	--	9075	9072	9054	8840

*Compiled from the data given in Frank Edwards, Projections of Total Labour Force in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 5.

[§]Statistics Canada, 1971 Census, Special Tabulations.

[†]Differences of one are due to the rounding of the sub-totals.

Table 22

Out-Migration from the Labour Supply in Northwestern Ontario, 1978 to 1981*

Occupation Group	1966-71 Distribution Factor [§]	1978	1979	1980	1981
Managerial, Administrative and Related Occupations (11)	5.7	559	562	565	584
Teaching and Related Occupations (27)	6.4	627	631	635	655
Service Occupations (61)	12.0	1176	1183	1190	1229
Forestry and Logging Occupations (75)	1.4	137	138	139	143
Mining and Quarrying Including Oil and Gas Field Occupations (77)	2.9	284	286	288	297
Processing Occupations (81-82)	3.0	294	296	298	307
Machining and Related Occupations (83)	2.1	206	207	208	215
Product Fabricating, Assembling and Repairing Occupations (85)	5.3	519	522	526	543
Construction Trades Occupations (87)	6.8	666	670	674	696
Transport Equipment Operating Occupations (91)	6.5	637	641	645	666
Other	47.9	4694	4720	4751	4905
Total [†]	--	9800	9855	9918	10240

*Compiled from the data given in Frank Edwards, Projections of Total Labour Force in Northwestern Ontario, to 1981, Northwestern Ontario Manpower Adjustment Study, no. 5.

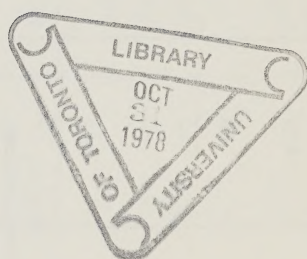
[§] Statistics Canada, 1971 Census, Special Tabulations.

[†] Differences of one are due to the rounding of the sub-totals.

Table 23

Summary Distribution of the Contributions of Migration and the Formal Education Sector
to the Labour Supply in Northwestern Ontario, 1978 to 1981

Occupation Group	1978	1979	1980	1981
Managerial, Administrative and Related Occupations (11)	-48	-56	-58	-85
Teaching and Related Occupations (27)	474	470	474	434
Service Occupations (61)	125	116	108	37
Forestry and Logging Occupations (75)	403	389	389	376
Mining and Quarrying Including Oil and Gas Field Occupations (77)	69	68	64	47
Processing Occupations (81-82)	15	14	12	-5
Machining and Related Occupations (83)	-3	-2	-2	-15
Product Fabricating, Assembling and Repairing Occupations (85)	193	186	177	142
Construction Trades Occupations (87)	73	72	74	32
Transport Equipment Operating Occupations (91)	-83	-88	-94	-128
Other	678	626	601	336
Total	1896	1795	1745	1171



Northwestern Ontario Manpower Adjustment Study

Component Studies

- 1. An Economic History
of Northwestern Ontario**
- 2. Projections of Labour Supply
by Occupation in Northwestern Ontario,
to 1981**
- 3. Projections of Enrolment and Graduations
from Secondary and Post-Secondary
Institutions in Northwestern Ontario, to 1981**
- 4. Labour Market Intentions of Graduating Students
from Post-Secondary Institutions
in Northwestern Ontario**
- 5. Projections of Total Labour Force
in Northwestern Ontario, to 1981**
- 6. Results of a Manpower Survey
of the Mineral and Forest Products Industries
in Northwestern Ontario**
- 7. Projections of Manpower Requirements
by Occupation and Industry for
Northwestern Ontario, to 1981**
- 8. Aspects of Migration
in Northwestern Ontario, 1966-71**
- 9. Why People Move from Northwestern Ontario**
- 10. Labour Turnover and Absenteeism
in Selected Industries:
Northwestern Ontario and Ontario**

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